

Air Quality Documentation: Publishing and Using ISO 19115, -2 Metadata

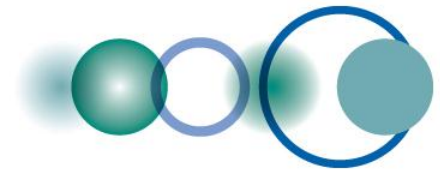
Erin Robinson, Foundation for Earth Science

Ted Habermann, NOAA NGDC

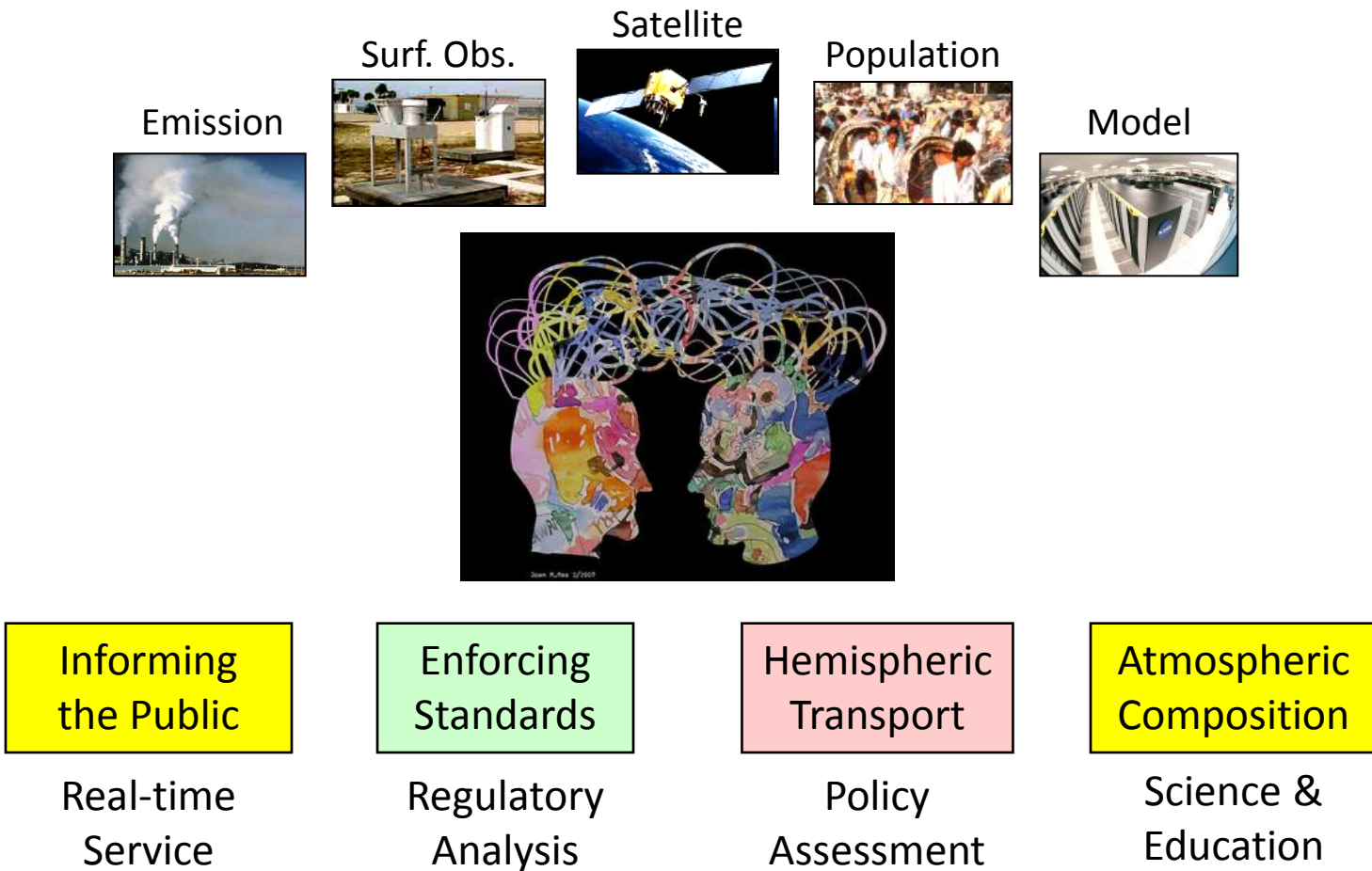
Rudy Husar, Washington University

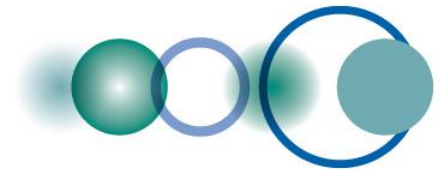
GEO Air Quality Community of Practice,
5 September 2012
Dublin, Ireland





Observing Systems



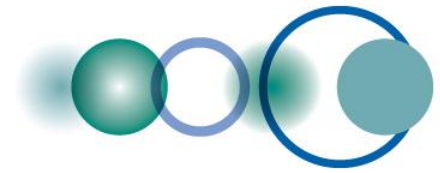


Hurdles

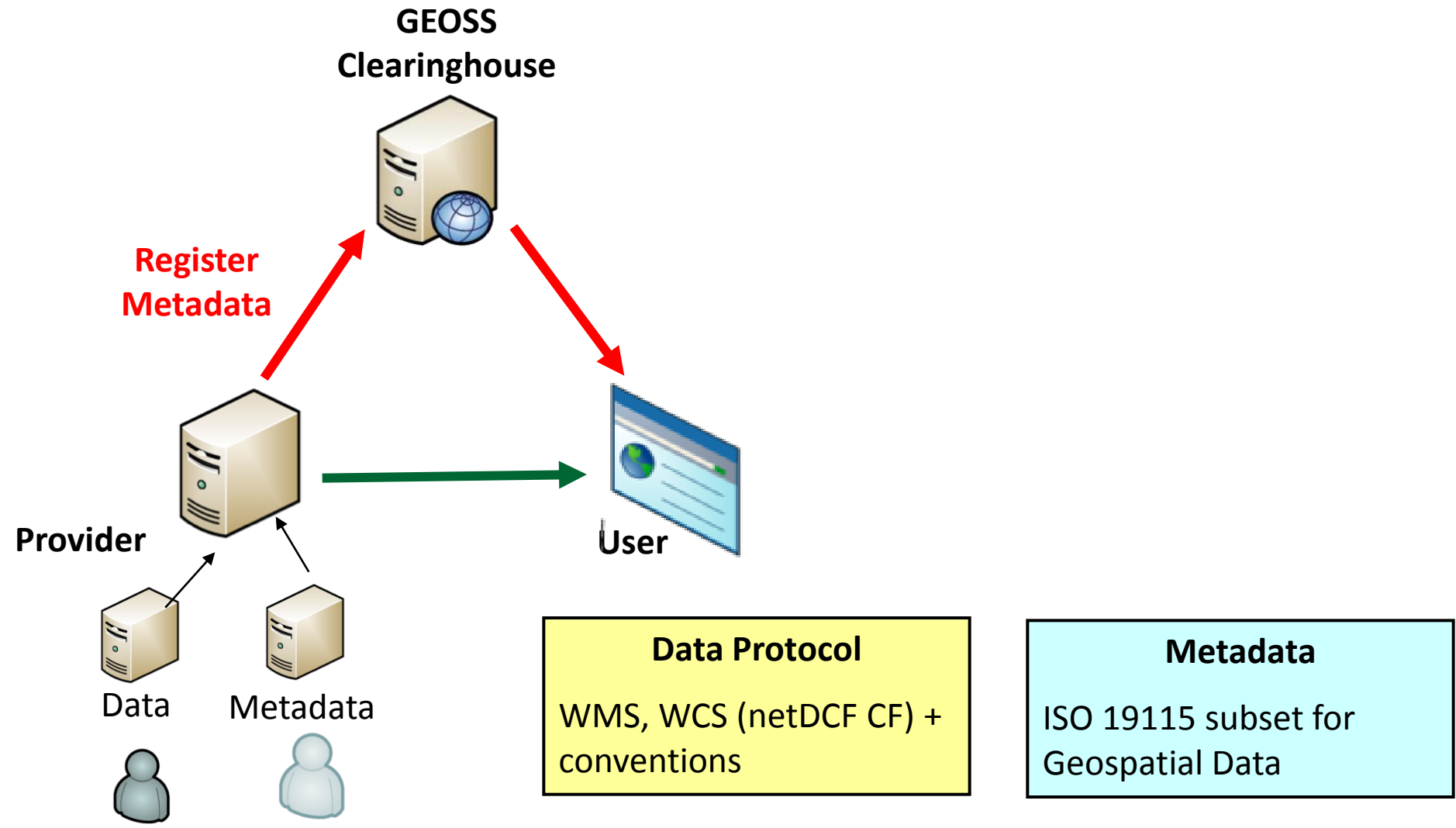
*“The user cannot **find** the data;
If he can find them, he cannot **access** them;
If he can access them, he doesn't know **how good** they are;
if he finds them good, he can not **merge** them with other data ”*

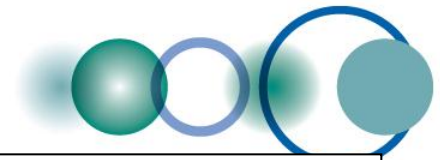
The Users View of IT, NAS 1989



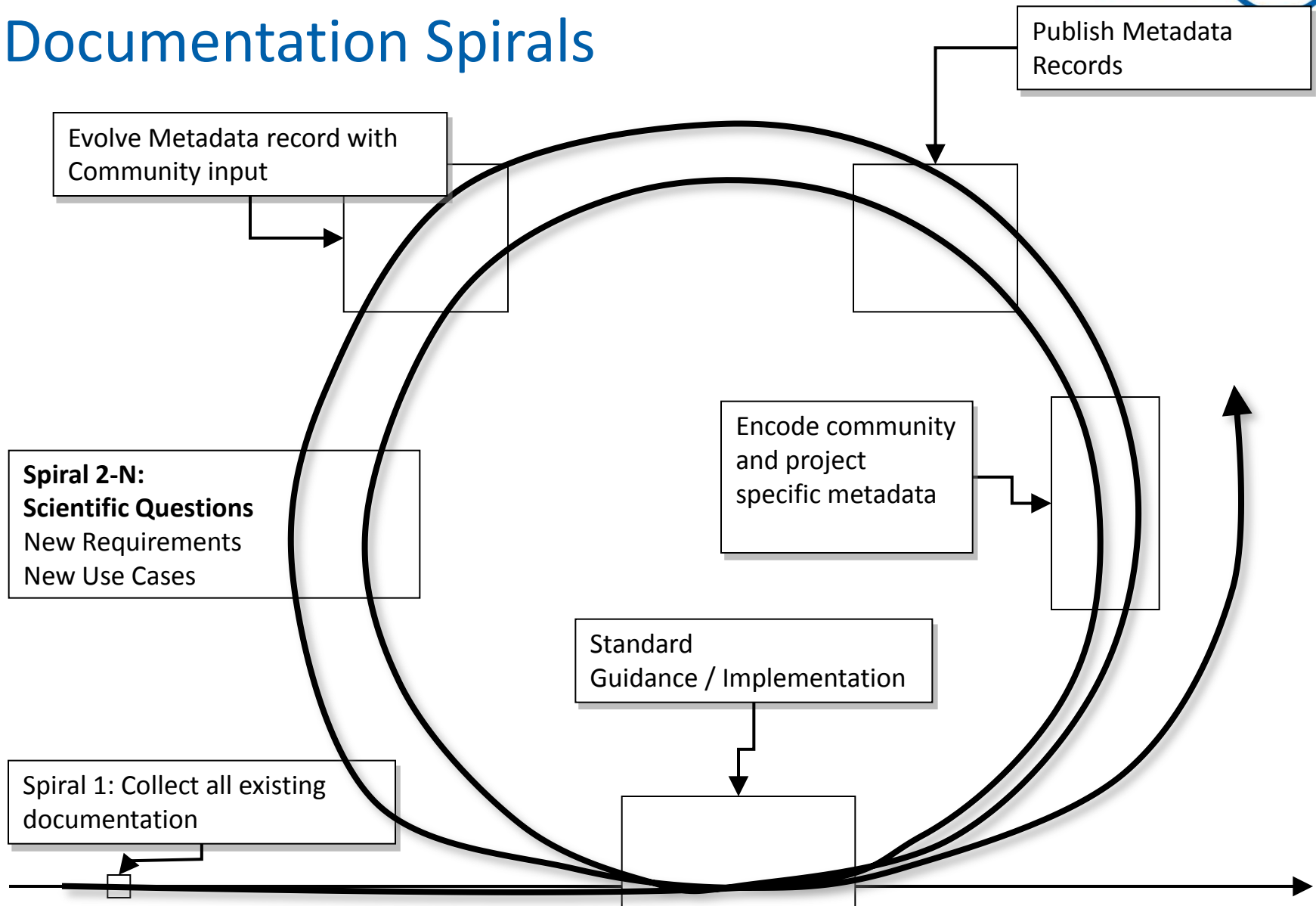


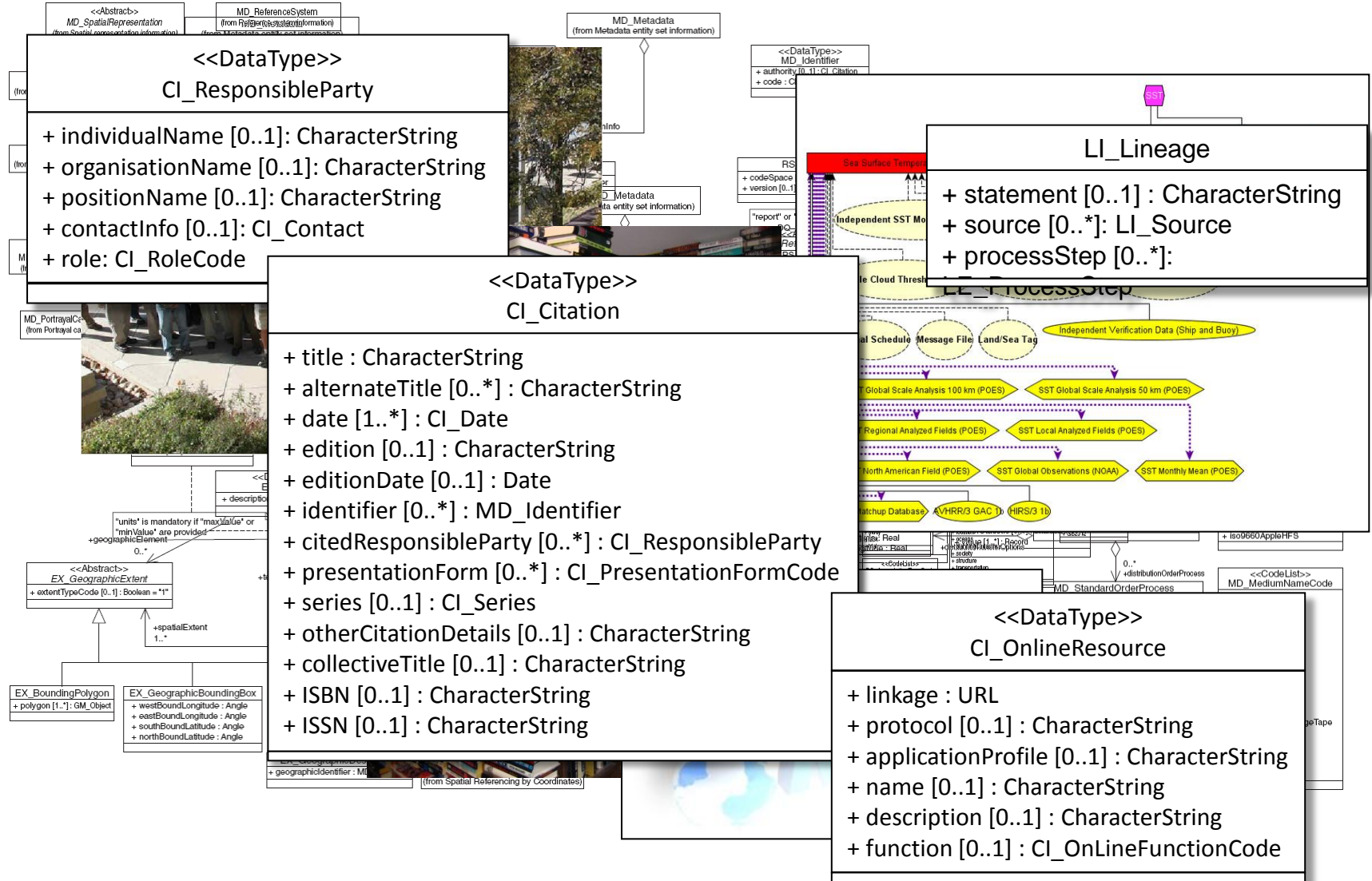
Preparation of Data and Metadata

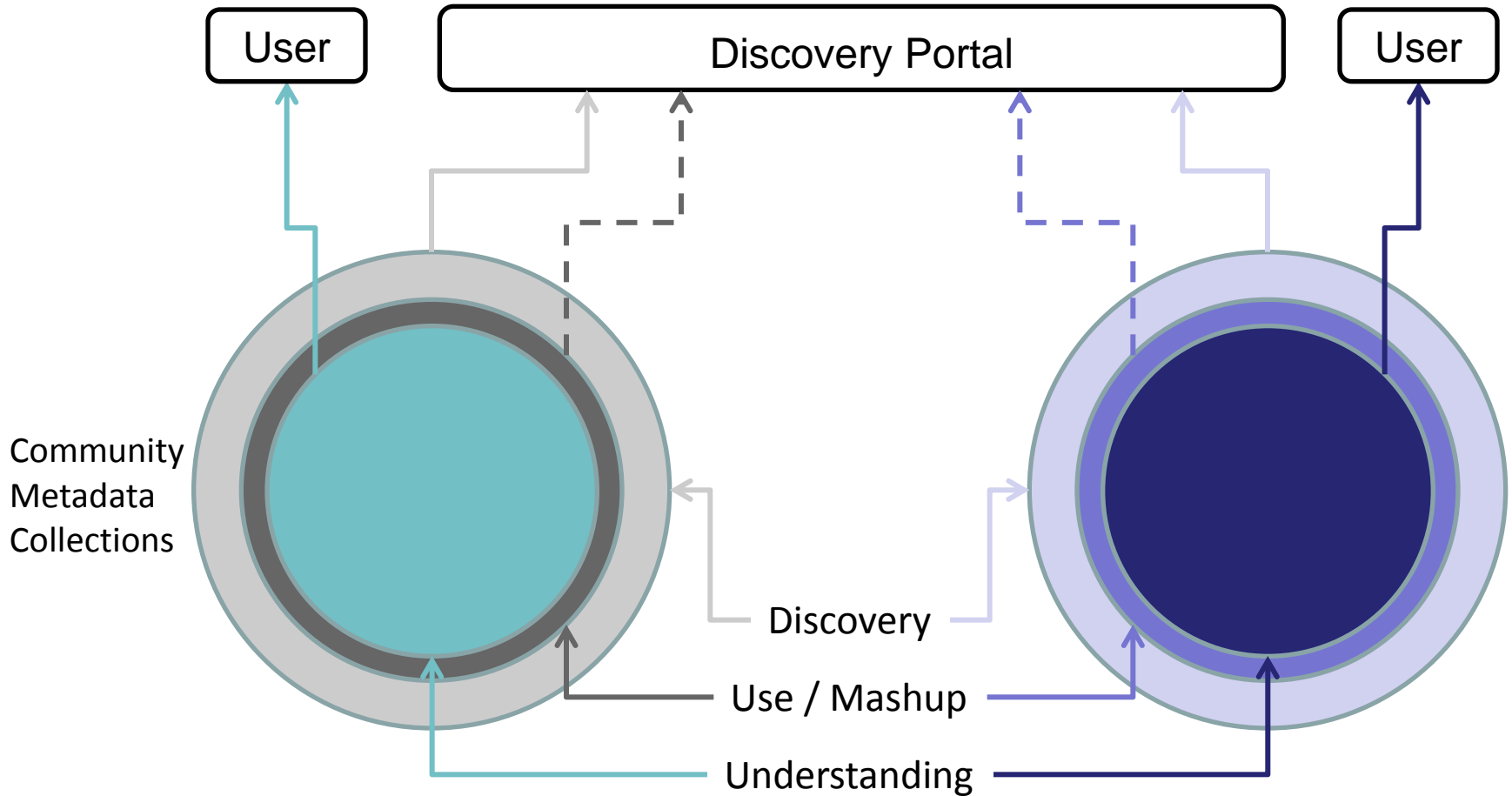
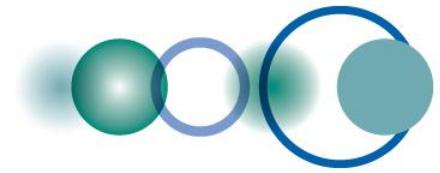




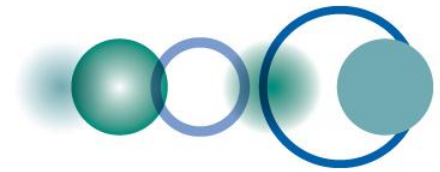
Documentation Spirals



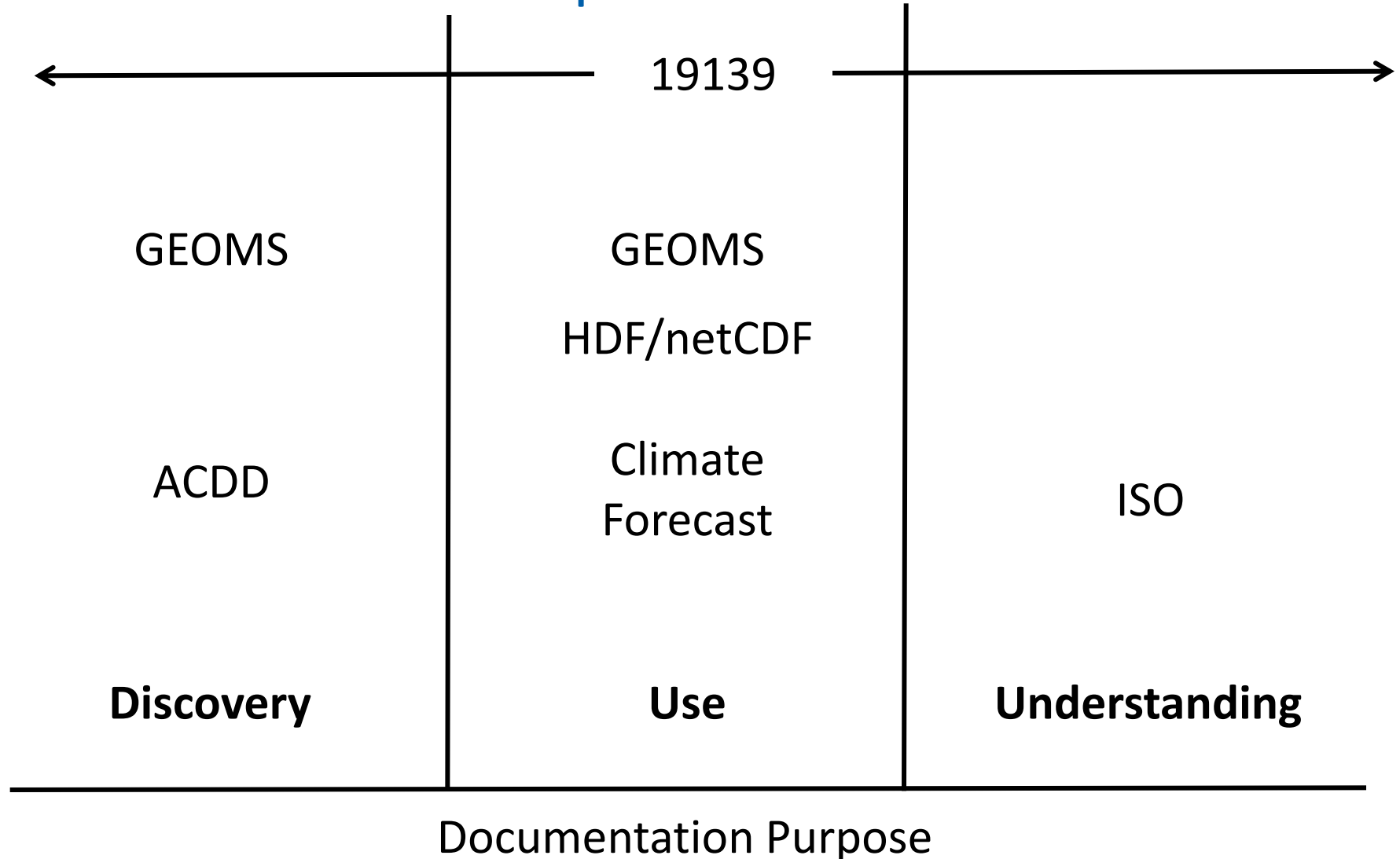


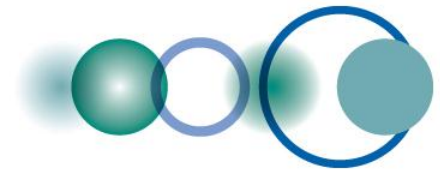


More documentation is required for understanding data than discovering or using it.

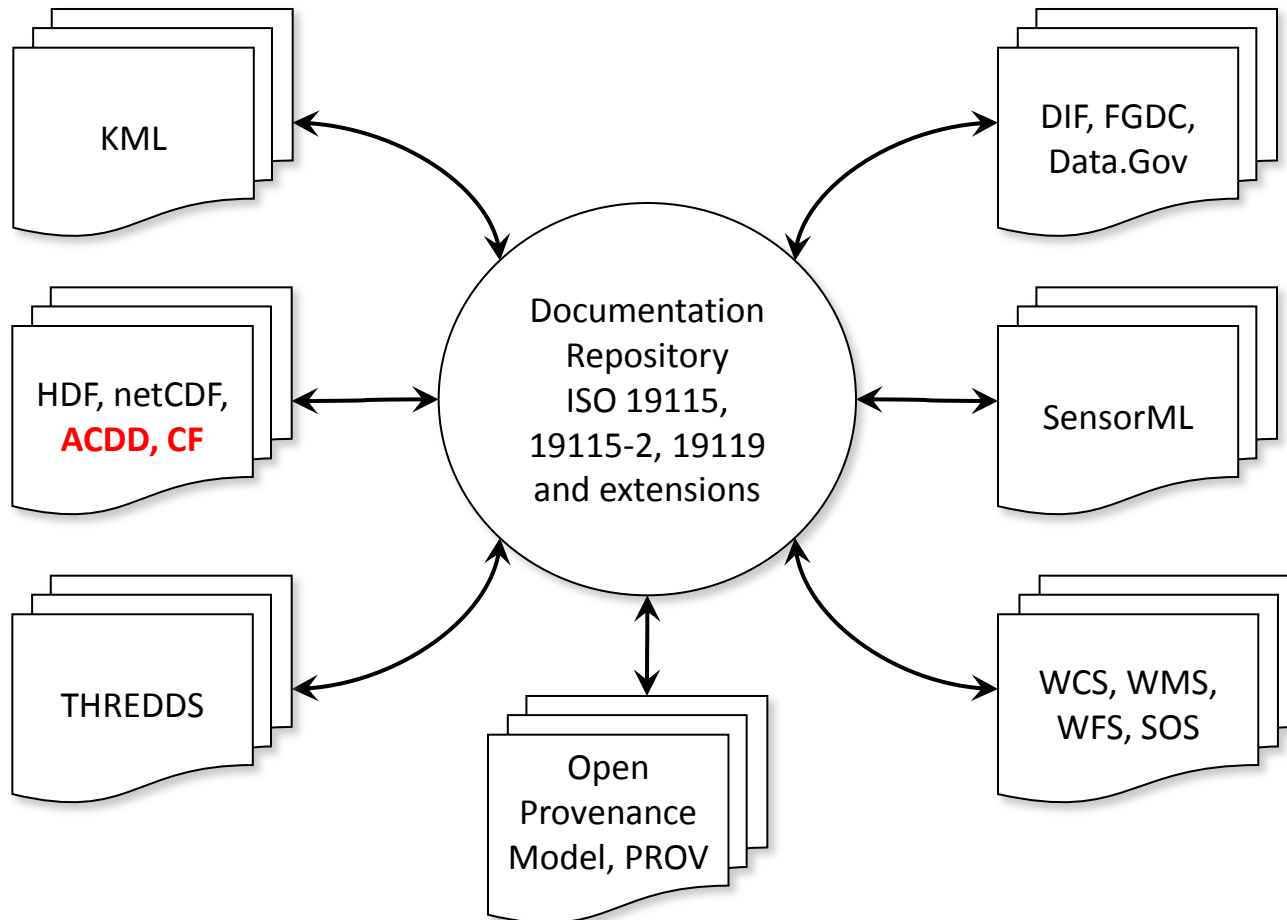


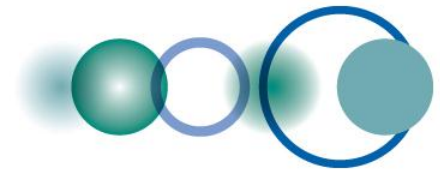
Conventions and Purposes





Documentation in Multiple Dialects





ISO 19115-2

- Extends specifically for imagery and gridded data
- MI_Acquisition was a new addition (operation, platform, instrument)
- LI_Source extended to include output of processing step

MD_Metadata → MI_Metadata

MD_Georectified → MI_Georectified

MD_Georeferenceable → MI_Georeferenceable

MD_Band → MI_Band

MD_ImageDescription → MI_ImageDescription

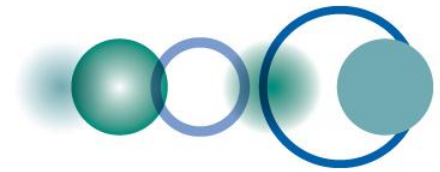
MD_CoverageDescription → MI_CoverageDescription

DQ_Result → QE_CoverageResult

DQ_Element → QE_Usability

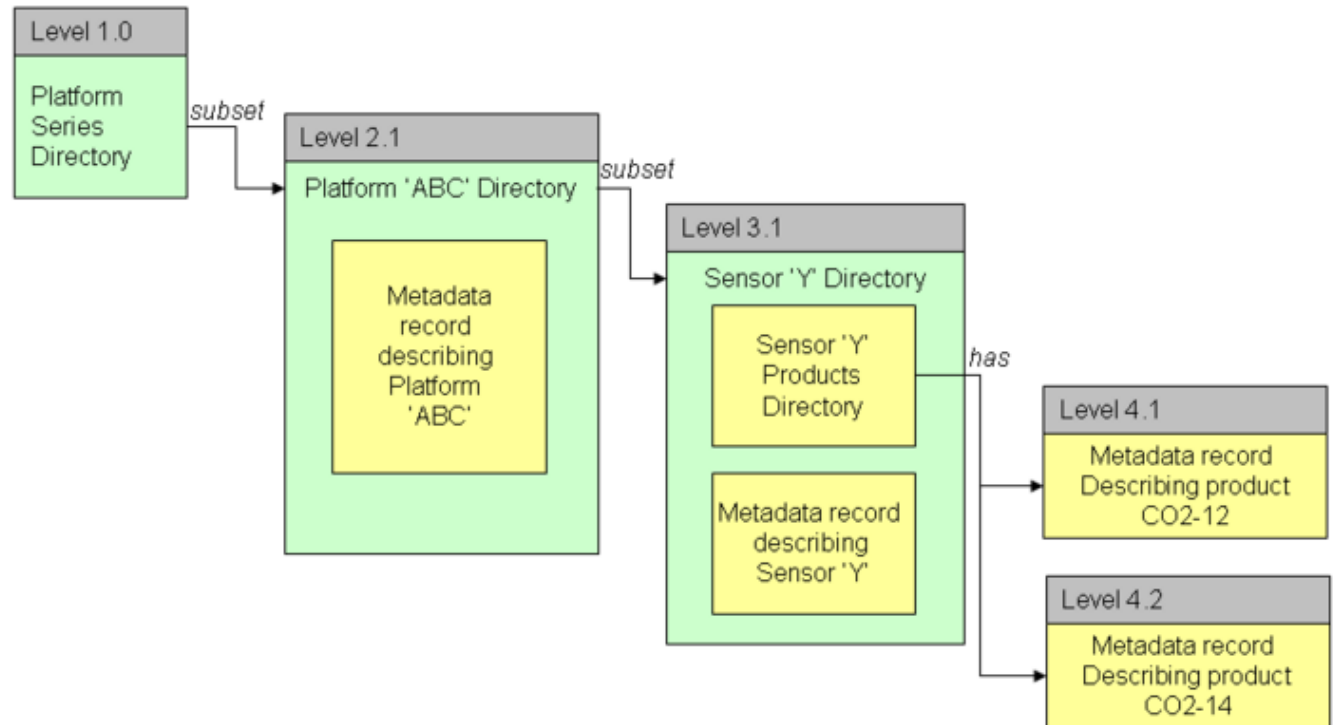
LI_ProcessStep → LE_ProcessStep

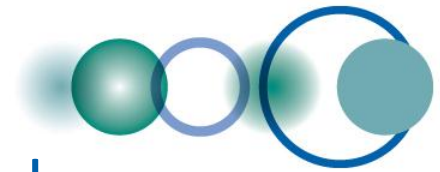
LI_Source → LE_Source



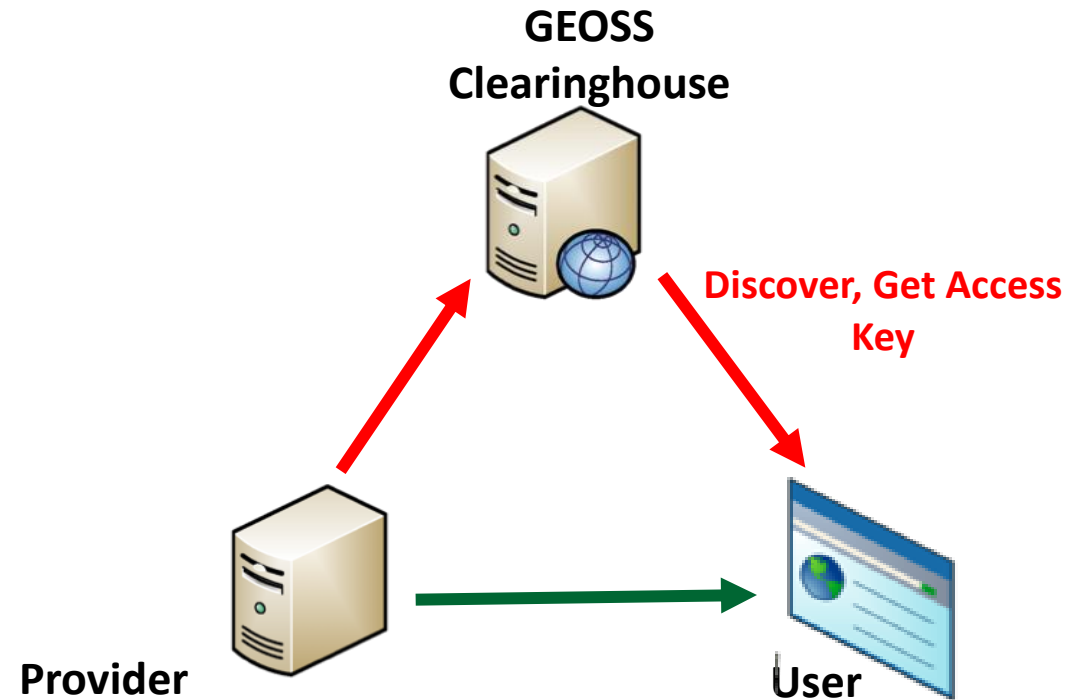
Data Model

- Hierarchy Level
 - Attribute
 - Dataset
 - Observation
 - Process
 - Collection
 - Series
 - Service
 - Measurement

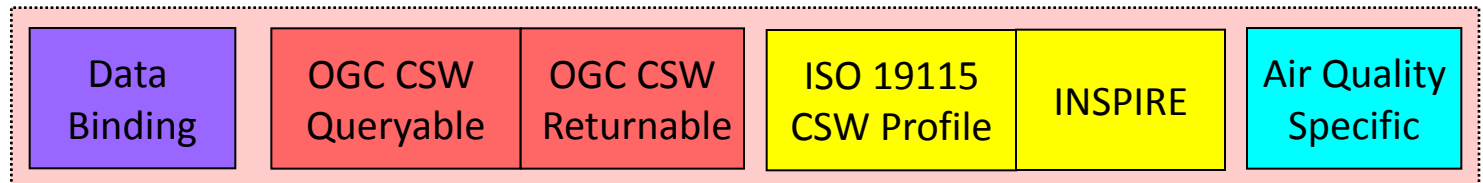


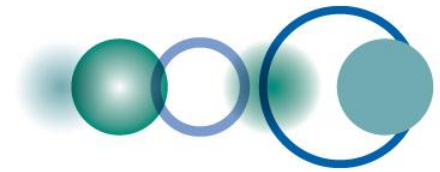


Air Quality Metadata Record

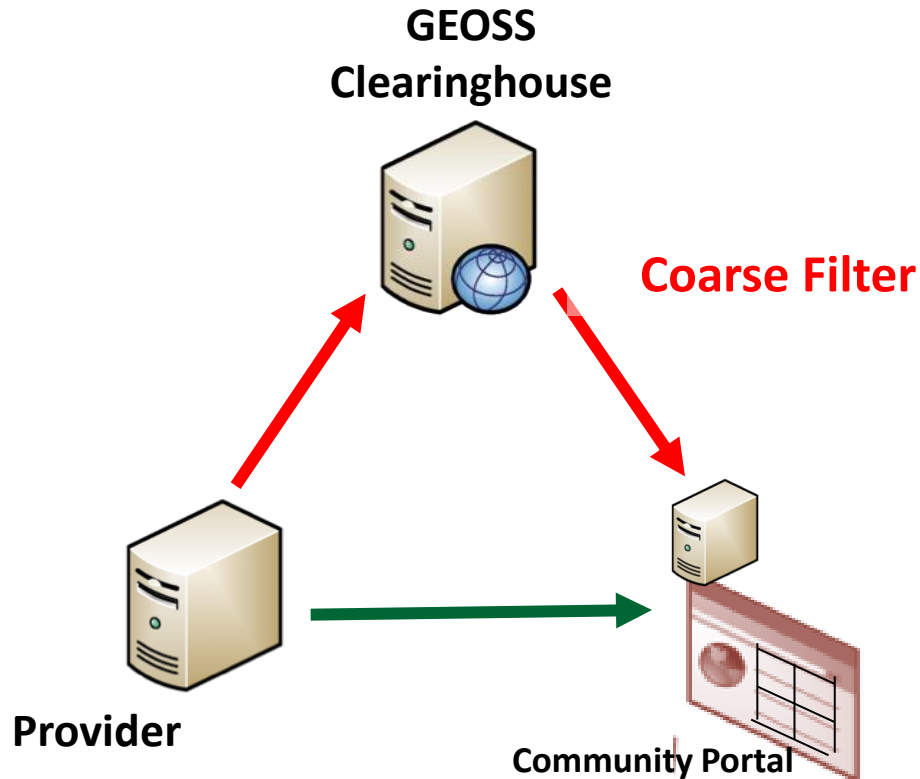


Metadata for Finding and Accessing Data





Search for AQ Data



GEOSS-CLEARINGHOUSE: Common Search Facility

Search keywords:

Search title:

Search record type:

Search collection:

Search full text:

Search abstract:

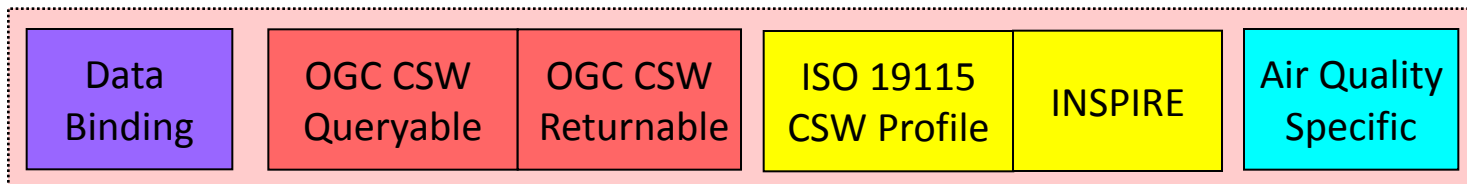
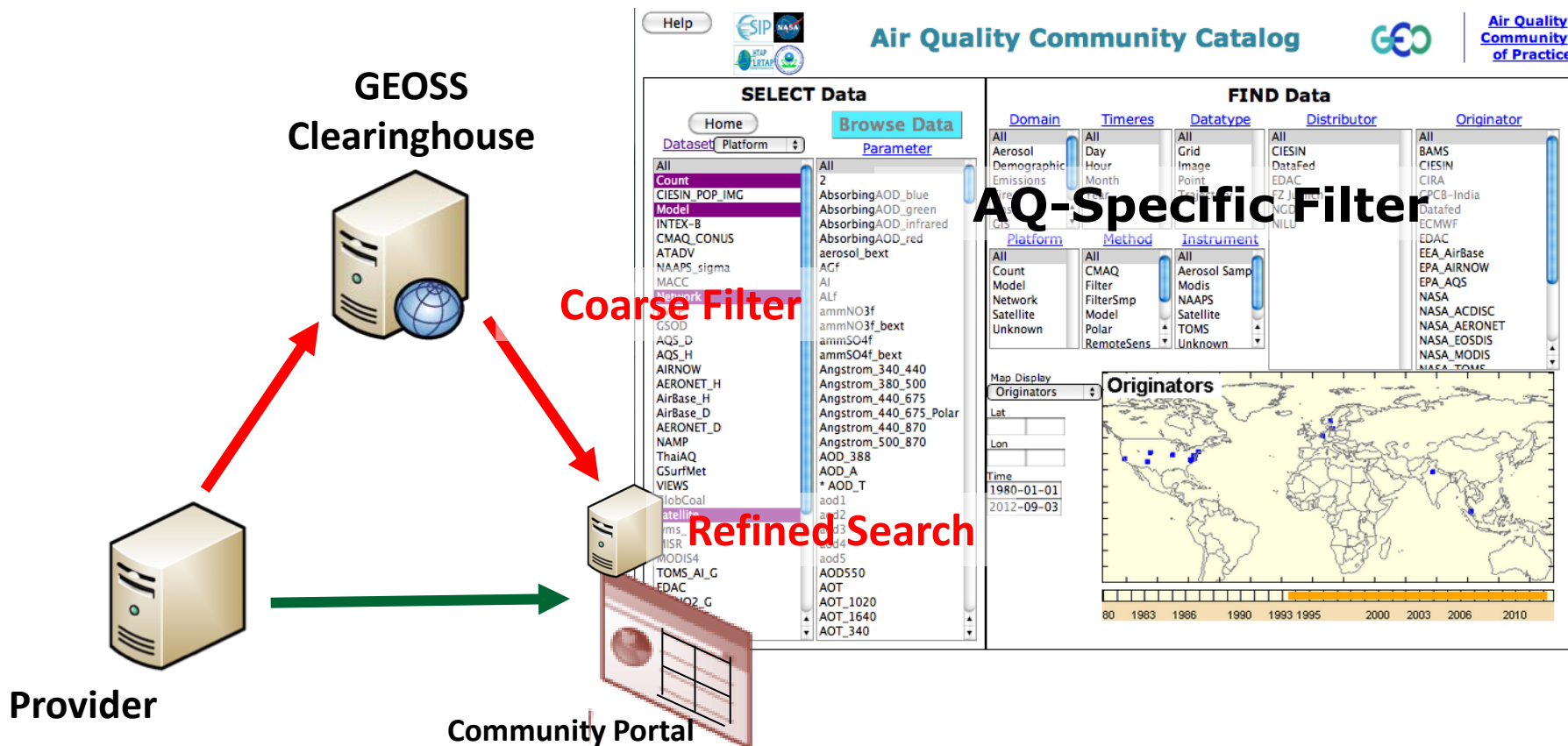
Search identifier:

Bounding box (W,S,E,N):

Format to return: ☒ HTML | ☐ Atom | ☐ Dublin Core | ☐ RSS | ☐ Plain Text

Data Binding	OGC CSW Queryable	OGC CSW Returnable	ISO 19115 CSW Profile	INSPIRE
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Refined Search for AQ Data



SELECT Data

Home

Browse Data

Dataset Platform

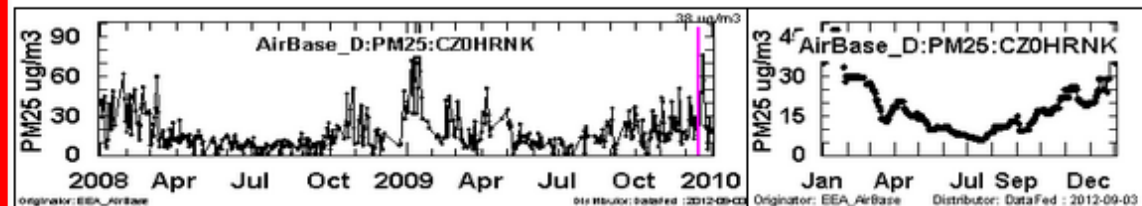
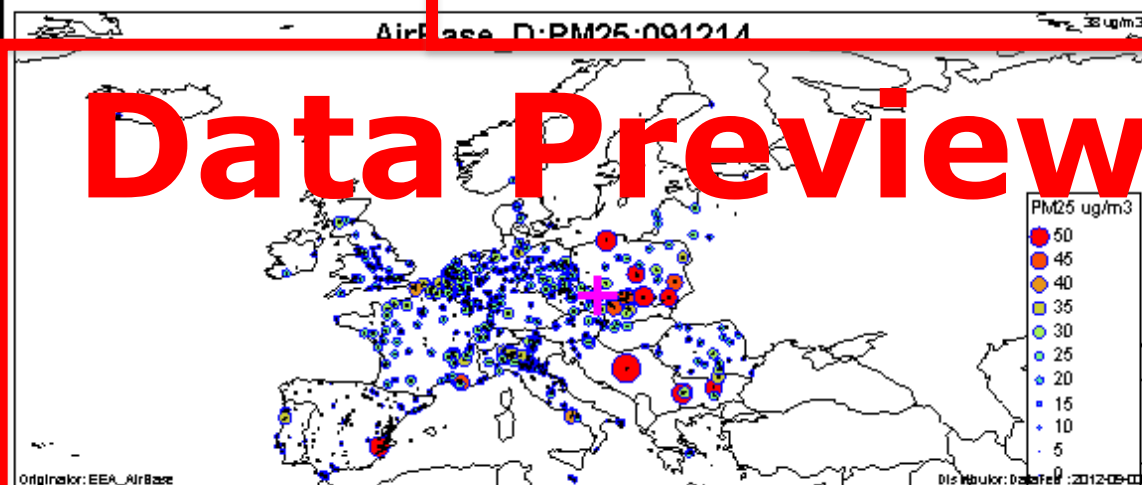
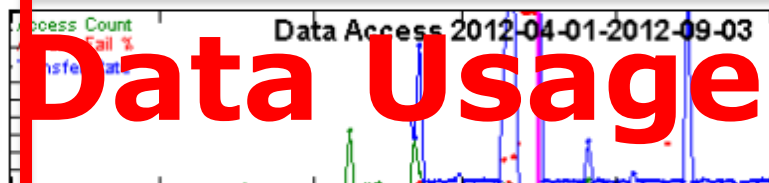
Parameter

All	All
Count	O3
CIESIN_POP_IMG	PM1
Model	PM10
INTEX-B	PM25
CMAQ_CONUS	SO2
ATADV	Sulf_PM25
NAAPS_sigma	Sulf_Tot
MACC	TSP
Network	
EMEP	
GSOD	
AQS_D	
AQS_H	
AIRNOW	
AERONET_H	
AirBase_H	
AirBase_D	
AERONET_D	
NAMP	
ThaiAQ	
GSurfMet	
VIEWS	
GlobCoal	
Satellite	
wms_	
MISR	
MODIS4	
TOMS_AI_G	
EDAC	
OMNO2_G	
OMSO2_G	
OMAERUV_G	
OMNO2_Ig	

Data Summary

AirBase_D : AirBase - The European air quality database - Daily Data

Originator:  Domain: [Aerosol](#)
Timeres: [Day](#)
Distributor:  Datatype: [Point](#)
Platform: [Network](#)
Dataspace:  Method: [Unknown](#)
Wiki: [Instrument: Unknown](#)



AirBase is the air quality information system maintained by the EEA through the European topic centre on Air and Climate Change. It contains air quality data delivered annually under 97/101/EC Council Decision establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States (EoI Decision).

SELECT Data

Home

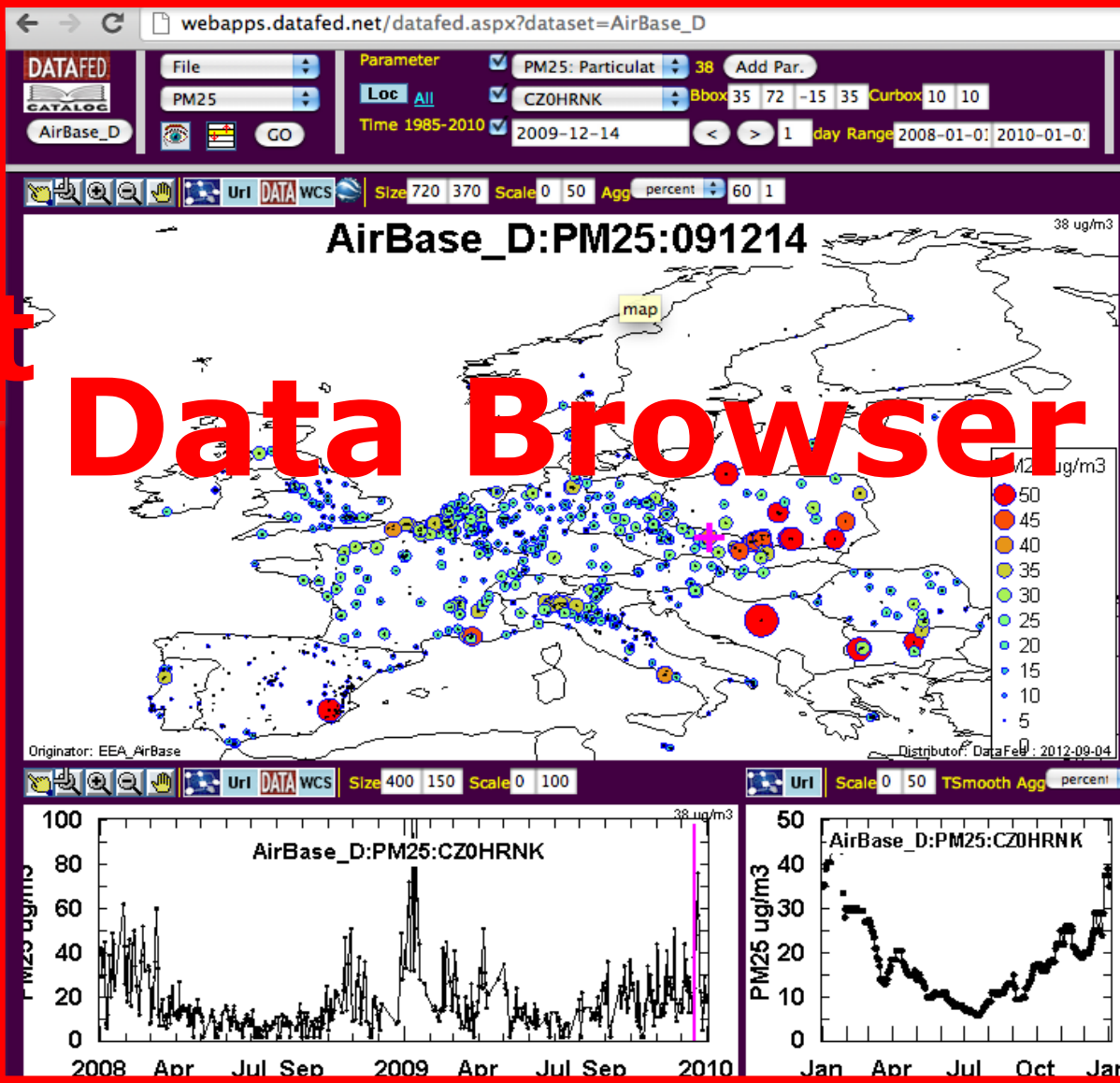
Browse Data

Dataset Platform

Parameter

- All
- Count
- CIESIN_POP_IMG
- Model
- INTEX-B
- CMAQ_CONUS
- ATADV
- NAAPS_sigma
- MACC
- Network
- EMEP
- GSOD
- AQS_D
- AQS_H
- AIRNOW
- AERONET_H
- AirBase_H
- AirBase_D
- AERONET_D
- NAMP
- ThaiAQ
- GSurfMet
- VIEWS
- GlobCoal
- Satellite
- wms_
- MISR
- MODIS4
- TOMS_AI_G
- EDAC
- OMNO2_G
- OMSO2_G
- OMAERUV_G
- OMNO2_Ig
- All
- O3
- PM1
- PM10
- PM25
- SO2
- NO2
- CO
- NO
- NO3
- NH3
- TSP

Select Data Browser



DRAFT Near Real Time Air Quality

GO Time Inc

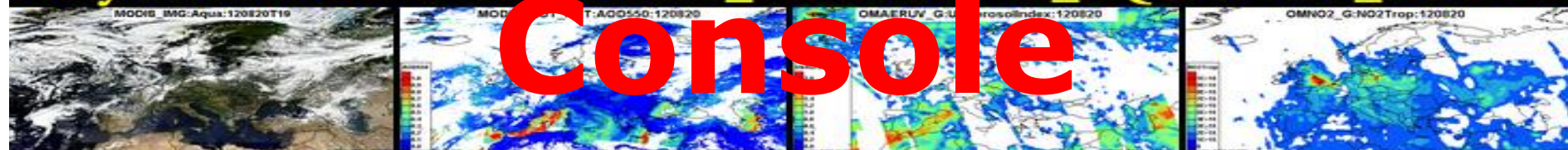
General Context TOPO REFLECTANCE POPULATION LIGHTS



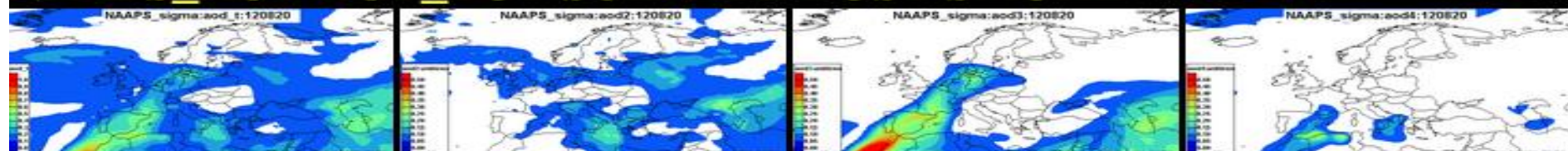
Daily NAAPS Emission Drivers SO2 DUST SMOKE



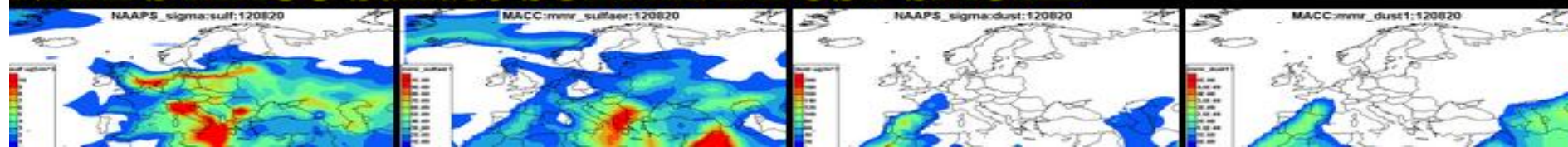
Daily Satellite Observations MOD_TERRA MOD_AQUA MOD_AOT OMNI

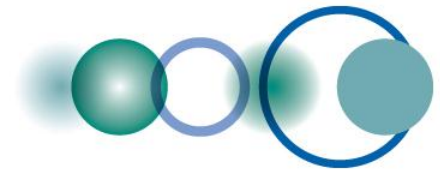


NAAPS_AOT AOT_TOT SULFATE DUST SMOKE



NAAPS MACC Surface SULFATE DUST SMOKE





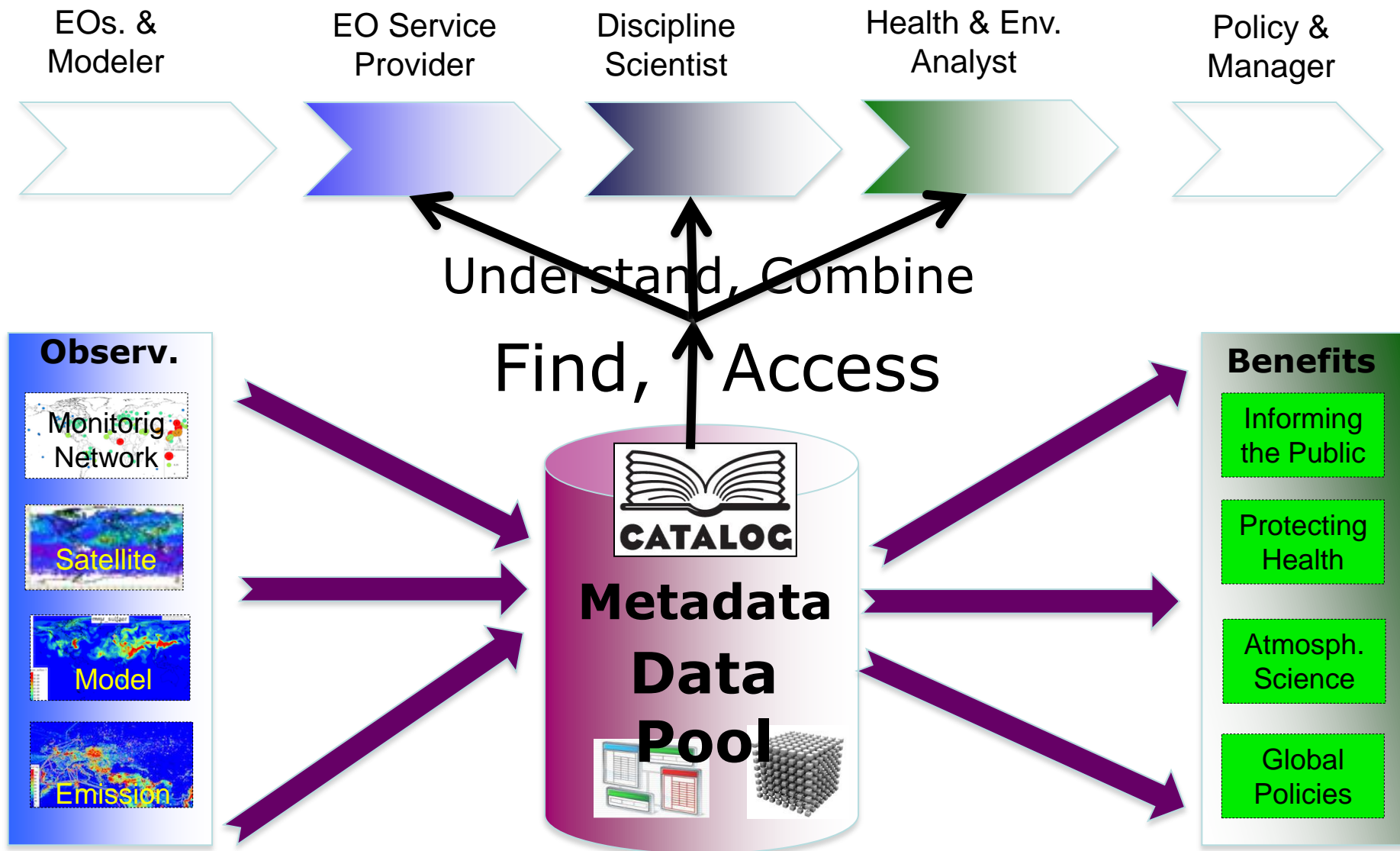
ComCat is a Component of GEOSS

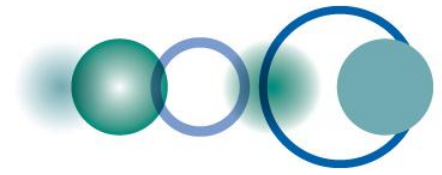
- The ComCat metadata are encoded as INSPIRE-compatible ISO 19115 records, one for each observation parameter.
- The ISO records are harvested and searched by the GEOSS Clearinghouse and recently by EURO-GEOSS Gi-Cat.
- Hence, distributed catalog systems for publishing, finding and accessing air quality data are technically feasible. However, their use has been limited.

Spectrum of Users



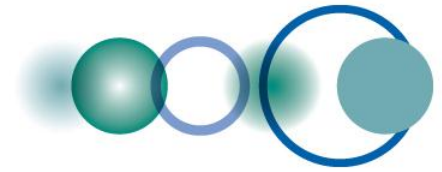
(G. Foley, EPA)





Next Steps:

- Better define the data model for our community
- Clarify the publication process
- Establish clear 'Getting started guidelines' for metadata creation
- Define some boiler plate language for access constraints and use constraints

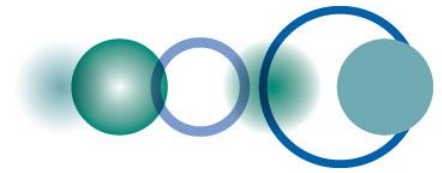


Acknowledgements

GI Cat and EuroGEOSS Broker – Stefano Nativi, Enrico
Boldrini

Martin Schultz, Juelich

Stefan Falke, Northrop Grumman



Links

- [ESIP AQ Cluster](#)
- [AQ Community Portal](#) | [ISO 19115 AQ Metadata Editor](#)
- [AQ Community Catalog](#) | [AQ Client Browser](#)